Trend Study 24-2-03

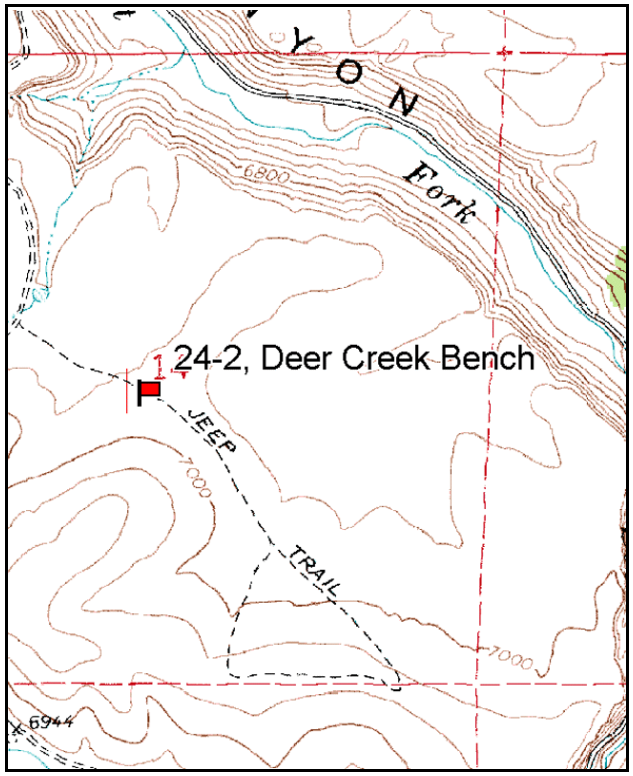
Study site name: Deer Creek Bench . Vegetation type: Black Sagebrush .

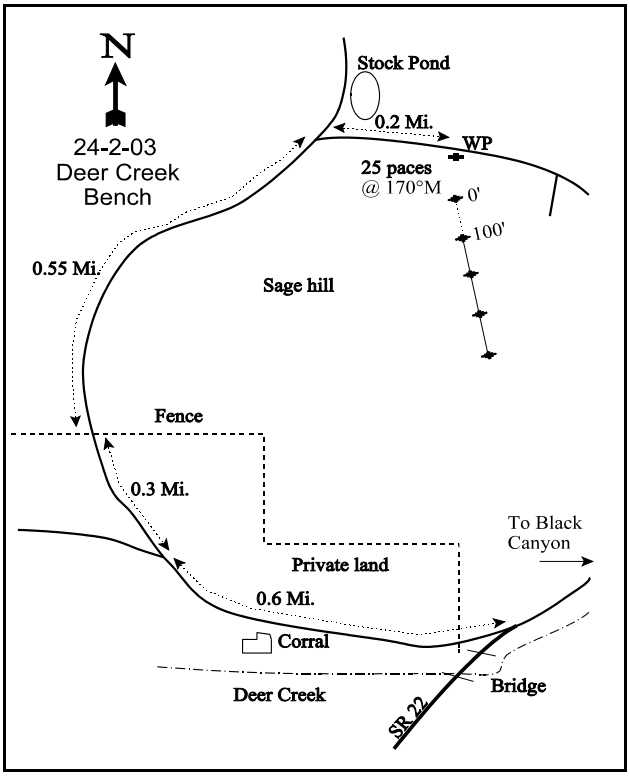
Compass bearing: frequency baseline 168 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From SR22 in the southern end of Black Canyon, follow the highway up Deer Creek to a bridge. Immediately north of the bridge, turn hard left. Take this road, which crosses private land, northwest for 0.6 miles passing a corral to a fork. Bear right, go 0.3 miles to a fence. Continue 0.55 miles to a fork by a stockpond. Turn right onto the jeep trail and proceed 0.2 miles to the study area. There is a witness post located on the right side of the road. Walk approximately 25 paces bearing 170 degrees to the 0-foot baseline stake. The study is marked by 2-foot tall fence posts. The 0-stake is marked by browse tag #9100. The transect runs south up the hill.





Map Name: Antimony

Diagrammatic Sketch

Township 32S , Range 2W , Section 14

GPS: NAD 27, UTM 12S 4208453 N, 414331 E

DISCUSSION

Deer Creek Bench - Trend Study 24-2

The Deer Creek Bench trend study is located on the east side of the unit in an area characterized by a broad, gently sloping (11%) surface with low relief that is situated near the base of steeper slopes that rise up to the Sevier Plateau. The area is covered with alluvial gravel and sand over bedrock. The key browse species are Wyoming big sagebrush and black sagebrush. This is a key winter use area for mule deer that is also utilized by a growing herd of antelope. Numerous deer pellet groups and several antler drops have been found in the area during each reading. Pellet group data from 1997 estimated 121 deer days use/acre (289 ddu/ha). Elk also lightly use the area with 8 elk days use/acre estimated in 1997 (20 edu/ha). Pellet group data from 2003 estimated 64 deer days use/acre (159 ddu/ha). A few deer pellet groups were from spring/summer use but most appeared to be from winter use. Several sage grouse pellets were also encountered. Escape and thermal cover are not present on the site, but some is located one-half mile to the west. It appears that the area is used lightly by livestock with only 6 cow use days/acre estimated in 1997 and 8 in 2003. A stock pond is located about 1/4 of a mile to the north, and Deer Creek is 3/4 of a mile to the south of the study. There are no other known uses of the area and human pressure is assumed to be minimal during the year.

The soils are a coarse textured, sandy loam. A large portion of the surface is covered with erosion pavement and rock. The soil is fairly deep with an effective rooting depth estimated at almost 14 inches. The soils lack a well-developed A horizon. There is an abundance of small pebbles and large gravel on the surface and through the soil profile down to a depth of six to eight inches. Few rocks are found below eight inches. At about 10 to 12 inches in depth, a light colored more sandy horizon is found. Patches of bare ground are interspersed among the rocks, litter, and vegetation. Most of the litter is found beneath the shrub canopy. There is not much evidence of excessive erosion on this site.

A fairly dense stand of black sagebrush occupies the site along with some pygmy sagebrush. Density of black sagebrush has remained stable over the years with a dense population, averaging around 8,500 plants/acre. The stand appears to be dynamic with high numbers of seedlings and young. Use was heavy in 1987 and 1991 but light to moderate in 1997 and 2003. Vigor has been classified as good on most plants during all readings except for 1991 when 21% of the plants sampled displayed poor vigor. The number of decadent plants also peaked at 55% in 1991, but has since declined to 15% in 1997 and 24% in 2003. Low growing pygmy sagebrush was first sampled with the larger sample used in 1997. Density was estimated at 2,500 plants/acre in 1997 and 3,220 in 2003. These shrubs average only 2 inches in height and are mostly unutilized.

Slenderbush eriogonum provides some additional forage on the site with a density of 7,620 plants/acre in 2003. These shrubs are small averaging only 2 inches in height. Small numbers of winterfat also provide some additional forage. Narrowleaf low rabbitbrush, a poor value increaser, is also abundant with a density of 3,060 plants/acre in 1997 and 3,360 in 2003. The population is mostly mature. Broom snakeweed is also found on the site and there may have been some identification problems between it and rabbitbrush during past readings.

Herbaceous plants are rare. Bottlebrush squirreltail, Indian ricegrass, and needle-and-thread are the only perennial grasses found on the site. These three perennial species produced only 4% cover in 1997, increasing to about 7% in 2003. Nine forb species were encountered in 1997, and only 6 species in 2003. Only trailing fleabane and scarlet globemallow occur more than rarely. All forbs combined produced less than 1% cover in 1997 and 2003. They are probably of limited value to mule deer during the spring.

1991 TREND ASSESSMENT

Basal vegetative cover and litter cover have both declined since the last survey, from 9% to 3%, and 25% to 17%, respectively. Collectively, rock and pavement cover have increased somewhat from 47% to 54%. This data would indicate a downward trend for soil. Trend for browse has become somewhat more difficult to determine since the survey in 1987. Black sagebrush density has decreased from 9,999 down to 8,599 plants/acre. The amount of heavy hedging has decreased from 58% to 36% but the sagebrush displaying poor vigor increased from 2% to 21%. The number of decadent plants also increased from 29% to 55% of the population. Trend for browse is considered down slightly even with a notable decrease in the broom snakeweed population. The herbaceous understory is about the same for the grasses, but the forbs are mostly on the decline. The trend would be slightly declining. An extended period of drought has been responsible for much of this downward trend.

TREND ASSESSMENT
soil - slightly downward (2)
browse - slightly downward (2)
herbaceous understory - slightly downward (2)

1997 TREND ASSESSMENT

The soil trend appears to have improved slightly since 1991. Percent bare ground has declined from 24% to 13% and rock/pavement cover has also declined from 54% to 39%. Percent litter cover has remained at similar levels to 1991 estimates. In addition, sum of nested frequency of grasses has increased slightly. Trend for the key browse, black sagebrush, is considered stable. Moderate and heavy use has declined from 81% to 36%, vigor has improved, and percent decadence declined from 55% to 15%. However, seedlings and young plants have steadily decreased since 1987, along with a steady increase in the percentage of decadent plants being classified as dying. Trend for the herbaceous understory is up slightly but still depleted with grasses and forbs producing only 5% total cover.

TREND ASSESSMENT
soil - up slightly (4)
browse - stable (3)
herbaceous understory - up slightly (4)

2003 TREND ASSESSMENT

Trend for soil is stable with similar ground cover characteristics compared to 1997. Trend for the key browse species, black sagebrush, remains stable. Density has remained similar since 1987. Use is light to moderate, vigor good on most plants, and percent decadence has remained moderately low at 24%. Recruitment is down however, with no seedlings encountered in 2003 and young plants accounting for only 1% of the population. The population may decline slightly in the future if drought conditions persist. Trend for the herbaceous understory is stable. Sum of nested frequency of perennial grasses has increased slightly while frequency of perennial forbs has declined slightly. Cover of perennial grasses did increase from 4% to 7% but overall herbaceous cover remains poor.

TREND ASSESSMENT
soil - stable, but in poor condition (3)
browse - stable (3)
herbaceous understory - stable, but poor (3)

HERBACEOUS TRENDS --
Management unit 24 , Study no: 2

Type	Species	Nested Frequency				Average Cover %	
		'87	'91	'97	'03	'97	'03
G	Bromus tectorum (a)	-	-	3	2	.00	.00
G	Oryzopsis hymenoides	$_{a}$9	$_{a}$11	$_{b}$73	$_{b}$93	2.04	4.46
G	Sitanion hystrix	126	98	101	138	1.66	1.92
G	Stipa comata	$_{a}$-	$_{ab}$7	$_{bc}$14	$_{c}$28	.26	.49
Total for Annual Grasses		0	0	3	2	0.00	0.00
Total for Perennial Grasses		135	116	188	259	3.96	6.88
Total for Grasses		135	116	191	261	3.97	6.88
F	Antennaria rosea	-	-	2	-	.00	-
F	Arabis spp.	$_{b}$9	$_{a}$-	$_{ab}$5	$_{a}$-	.01	-
F	Astragalus spp.	$_{b}$20	$_{b}$24	$_{a}$4	$_{a}$-	.01	-
F	Astragalus utahensis	-	-	6	-	.01	-
F	Chenopodium spp. (a)	-	-	$_{b}$18	$_{a}$-	.04	-
F	Cruciferae	5	-	-	-	-	-
F	Descurainia pinnata (a)	-	-	$_{a}$-	$_{b}$13	-	.08
F	Erigeron pumilus	$_{b}$48	$_{a}$19	$_{b}$41	$_{a}$8	.31	.05
F	Gayophytum ramosissimum(a)	-	-	$_{b}$35	$_{a}$11	.08	.03
F	Paronychia spp.	$_{b}$19	$_{b}$21	$_{a}$-	$_{a}$-	-	-
F	Phlox hoodii	$_{a}$-	$_{ab}$8	$_{a}$-	$_{b}$13	-	.06
F	Phlox longifolia	13	12	6	12	.01	.05
F	Senecio multilobatus	1	-	-	-	-	-
F	Sphaeralcea coccinea	$_{b}$60	$_{ab}$58	$_{a}$31	$_{ab}$37	.20	.26
Total for Annual Forbs		0	0	53	24	0.12	0.10
Total for Perennial Forbs		175	142	95	70	0.56	0.43
Total for Forbs		175	142	148	94	0.69	0.54

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 24 , Study no: 2

Type	Species	Strip Frequency '97	Strip Frequency '03	Average Cover % '97	Average Cover % '03
B	Artemisia nova	93	98	16.65	17.47
B	Artemisia pygmaea	22	23	.82	.88
B	Ceratoides lanata	1	3	-	.03
B	Chrysothamnus viscidiflorus stenophyllus	47	46	2.23	3.05
B	Eriogonum microthecum	53	52	1.14	.76
B	Gutierrezia sarothrae	4	46	-	.45
B	Opuntia spp.	4	5	-	-
B	Pediocactus simpsonii	0	1	-	.01
Total for Browse		224	274	20.87	22.68

CANOPY COVER, LINE INTERCEPT --
Management unit 24 , Study no: 2

Species	Percent Cover '03
Artemisia nova	17.89
Artemisia pygmaea	.73
Chrysothamnus viscidiflorus stenophyllus	2.59
Eriogonum microthecum	.21
Gutierrezia sarothrae	.70

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 24 , Study no: 2

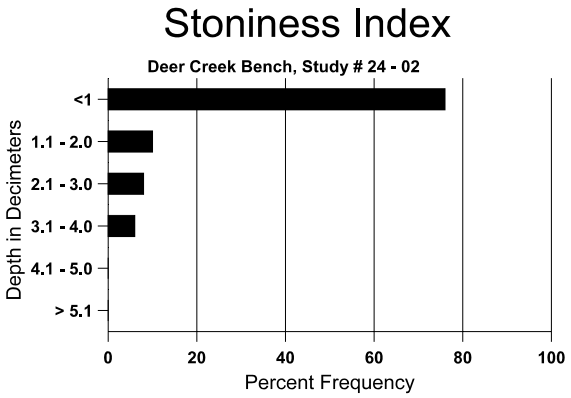
Species	Average leader growth (in) '03
Artemisia nova	1.1

BASIC COVER --
Management unit 24 , Study no: 2

Cover Type	Average Cover %			
	'87	'91	'97	'03
Vegetation	8.50	2.75	25.71	28.83
Rock	16.75	8.75	11.87	17.70
Pavement	30.00	45.25	27.52	27.36
Litter	24.50	17.00	16.72	18.10
Cryptogams	1.50	2.00	.34	.65
Bare Ground	18.75	24.25	13.28	14.39

SOIL ANALYSIS DATA --
Management unit 24, Study no: 2, Study Name: Deer Creek Bench

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
13.9	62.7 (10.2)	7.1	61.0	23.1	15.9	1.8	13.6	92.8	0.5



PELLET GROUP DATA --
Management unit 24 , Study no: 2

Type	Quadrat Frequency	
	'97	'03
Rabbit	2	11
Grouse	-	2
Elk	3	3
Deer	46	34
Cattle	3	6

Days use per acre (ha)	
'97	'03
-	-
-	-
8 (20)	-
121 (299)	64 (159)
6 (15)	8 (20)

BROWSE CHARACTERISTICS --
Management unit 24 , Study no: 2

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Artemisia nova											
87	**9999**	1800	2333	4733	2933	-	23	58	29	2	14/20
91	**8599**	666	1333	2533	4733	-	46	36	55	21	11/20
97	**5980**	220	780	4280	920	780	31	5	15	7	12/23
03	**8760**	-	100	6520	2140	900	18	0	24	4	11/22
Artemisia pygmaea											
87	**0**	-	-	-	-	-	0	0	0	0	-/-
91	**0**	-	-	-	-	-	0	0	0	0	-/-
97	**2500**	100	160	2340	-	-	24	0	0	0	2/7
03	**3220**	-	80	3020	120	-	.62	0	4	0	2/6
Atriplex canescens											
87	**66**	-	-	66	-	-	0	0	0	0	19/20
91	**66**	-	-	-	66	-	0	100	100	100	-/-
97	**0**	-	-	-	-	-	0	0	0	0	-/-
03	**0**	-	-	-	-	-	0	0	0	0	-/-
Ceratoides lanata											
87	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
97	**20**	-	-	20	-	-	100	0	-	0	4/8
03	**60**	-	-	60	-	-	0	100	-	0	3/4
Chrysothamnus viscidiflorus stenophyllus											
87	**66**	-	-	66	-	-	0	0	0	0	8/12
91	**66**	-	-	-	66	-	0	0	100	0	-/-
97	**3060**	-	140	2880	40	-	1	0	1	.65	6/12
03	**3360**	-	20	2980	360	-	0	0	11	3	6/12
Eriogonum microthecum											
87	**3600**	66	200	3400	-	-	0	0	-	0	3/3
91	**2266**	133	333	1933	-	-	32	15	-	0	2/2
97	**5600**	180	640	4960	-	-	4	0	-	0	3/5
03	**7620**	-	220	7400	-	60	11	2	-	0	2/4
Gutierrezia sarothrae											
87	**1932**	-	666	1266	-	-	0	0	-	0	8/9
91	**1133**	66	-	1133	-	-	0	0	-	0	5/4
97	**80**	-	-	80	-	-	0	0	-	0	8/7

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
03	**1920**	20	200	1720	-	-	0	0	-	0	6/5
Opuntia spp.											
87	**0**	66	-	-	-	-	0	0	-	0	-/-
91	**333**	66	333	-	-	-	0	0	-	0	-/-
97	**80**	-	-	80	-	-	0	0	-	0	4/4
03	**100**	-	-	100	-	-	0	0	-	0	4/9
Pediocactus simpsonii											
87	**0**	-	-	-	-	-	0	0	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	0	-/-
97	**0**	-	-	-	-	-	0	0	-	0	-/-
03	**20**	-	-	20	-	-	0	0	-	0	0/1